chapter 6

From Screen to Printer

Summary

In this chapter, you learn about:

Creating Layouts

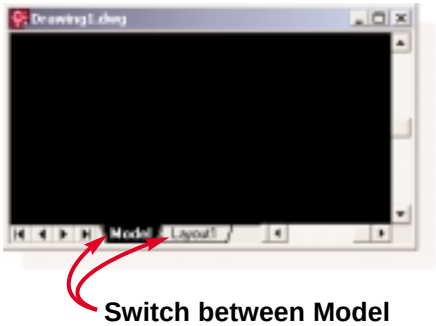
Page Setup

Layout Viewports

Printing

Layouts

AutoCAD's new Layout feature allows you to create multiple Paper Space Layouts in a single drawing file. Rather than having Model Space and Paper Space, now you have Model Space and one or more Layouts. Switching between Model Space and a Layout is as easy as clicking on a tab.

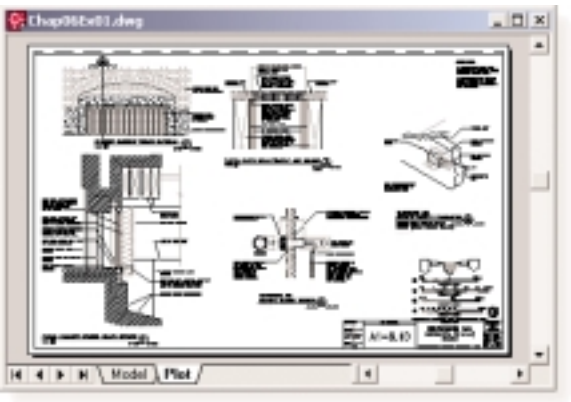


Switch between Model Space and a Layout using these tabs

At first thought, it might seem useful to create two layouts for each drawing, one for a half-size print, another for a full-size print. The problem with this method is if you change an object in one Layout, for instance enter information into the title block, you must make the same changes to the other Layout. A easier way is to create two Page Setups in a single Layout, then switch between them. We'll discuss Page Setup later in this chapter.

WYSIWYG

Layouts display a preview of exactly what the print will look like, including paper edge and its contents based on paper size, scale, orientation, offsets, lineweights and screened pens.



The Layout view - a wysiwyg preview of the print. This one is set to display Plot Styles, so it displays in greyscale.

From Screen to Printer

Once you have objects created in Model Space, printing your drawing consists of five steps, usually completed in this order:

- Create a Layout, or choose an existing layout
- Insert border/title block
- Page Setup
- Arrange your print: create viewport(s), add annotation i.e. north arrow etc.
- Preview and print

Creating Layouts

More often than not, since every drawing has at least one layout, you'll use an existing layout. For those drawings requiring multiple layouts, you can create new layouts by one of three methods: Create new, use a Wizard and import a layout from another drawing file or template file.

If you create a new Layout from scratch, you'll need to select your desired Page Setup settings. If you create a new Layout using the Wizard, or by importing a layout from another file, some or all of the Page Setup settings will already be completed for you.

New Layout from Scratch

To create a new Layout from scratch, click Insert ➔ Layout ➔ New Layout from the menu bar. You will be prompted to enter a name for your new layout, or you can press Enter to accept the default name.

Layout Wizard

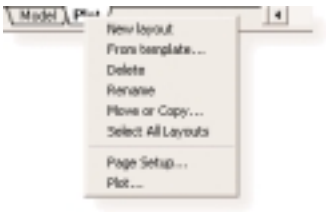
Click Insert ➔ Layout ➔ Layout Wizard from the menu bar. Through a series of dialog boxes, you enter a layout name, select a printer, paper size, units, paper orientation, title block and viewport options. While the wizard sounds like the way to go, it does have shortcomings when used here at the Lakewood NPS building:

- When setting up a layout for a HP half size print, there is no chance to specify to plot extents or window area and scale-to-fit.
- It's better to insert a title block from the Icon Menu, since a filename tag comes along with it - the wizard will insert a border/title block only, without a tag.
- The viewport has limited scale options.

Import a Layout

You can import a layout from both a template file (.dwt) or from a drawing file (.dwg). To import a layout from a template, click Insert Layout from Template, or right-click on one of the Model or Layout tabs, then select From template... from the shortcut menu. To import a layout from a drawing file, use DesignCenter (see Chapter 2 exercise 5, which demonstrates how to import layers - layouts work the same way - drag and drop).

Delete, Rename, Copy or Move a Layout

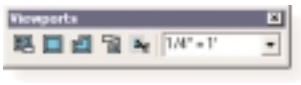


Right-clicking on the Model or one of the Layout tabs presents a shortcut menu with options to create new, delete, rename, move or copy, select all, page setup and plot. When you move a layout, which you can only do when you have multiple layouts, you change their order.

Layout Viewports

AutoCAD 2000 includes several enhancements to Layout (Paper Space) viewports.

New Viewports Toolbar



Using the new Viewport Scale Control on the viewport toolbar, you can easily set the scale of a viewport.

Non-Rectangular Viewports

Viewports can now be non-rectangular! Use the **Convert Object to Viewport** button on the Viewports toolbar, select a closed polyline, ellipse, spline, region, or circle to convert into a viewport.

Double-Click to Change Space

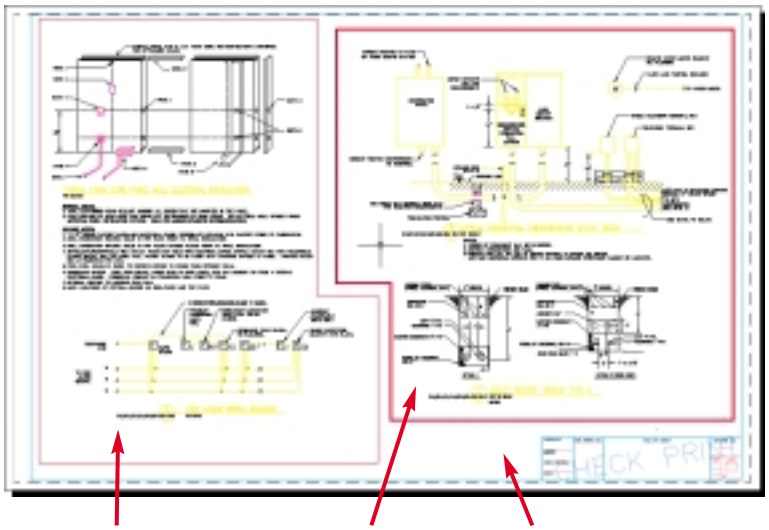
AutoCAD 2000 makes it very easy to switch between floating Model Space and Paper Space. Just double-click over the space, you're there!

Page Setup

When you perform a page setup, you are configuring these settings within a particular layout:

- Printer
- Pen assignments
- Paper size and orientation
- Plot area - extents, window etc.
- Scale - 1:1, 1:2 or scale-to-fit are most common
- Other minor settings

Once you complete a Page setup, your choices are saved with the drawing, forever, until you change them.



Double-click here to enter this Model Space Viewport

Double-click here to enter this Model Space Viewport

To enter Paper Space, double-click here or anywhere outside a viewport

Name That Page Setup

If you have a drawing that you'll print to more than one device, using different settings, save each page setup to its own name. For example, you could create two page setups: 1) HP Half Size 2) HP 650 Full Size. Using a single layout, you could switch back and forth between the saved page setups. The exercise later in this chapter will demonstrate saving and restoring page setups.

Viewport Lock

Have you have ever set up a viewport's scale and position of Model Space objects, then later zoomed inside of that viewport, messing up its display? If so, you'll appreciate

AutoCAD 2000's new Viewport Locking feature. If you pan or zoom inside of an active Paper Space viewport that is locked, AutoCAD will automatically switch to Paper Space before the command, and return you to floating Model Space after the command. Locking and unlocking a viewport is as easy as right-clicking and selecting lock on or off.

Printing

If there is a single command the creates the most user support calls and problems, it's printing/plotting. This is true in most offices that use AutoCAD, not just here at the NPS. In an attempt to make printing more user-friendly, the Plot dialog box has been completely reworked in AutoCAD 2000. Forget everything you know about plotting in release 14 - well, almost everything. Gone are .pcp and .pc2 files, which are configuration files that govern pen and printer settings. Instead, AutoCAD 2000 uses .ctb (color-dependant plot style table) files for color-based plotting, which store pen settings.

Complete the following tutorials to learn about the new way of plotting.

Exercise 1 - Page Setup and Printing an Existing Release 14 Drawing

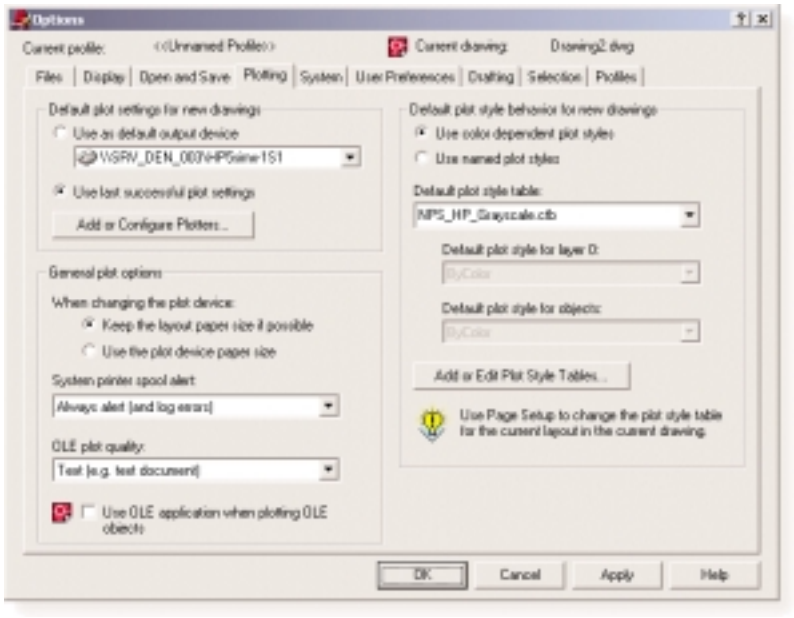
1. Open Chap06Ex01.dwg.

Configure AutoCAD to Your Preferences

Steps 2 - 10 below should be completed on the computer you use back at your desk, once only. You might prefer different settings, but here's mine:

2. Click **Tools ➔ Options** from the AutoCAD menu bar.
3. Click on the Display tab (tabs are across the top of the Options dialog).
4. In the Layout elements area, use these settings ➔

5. Click on the Plotting tab (see the example below).



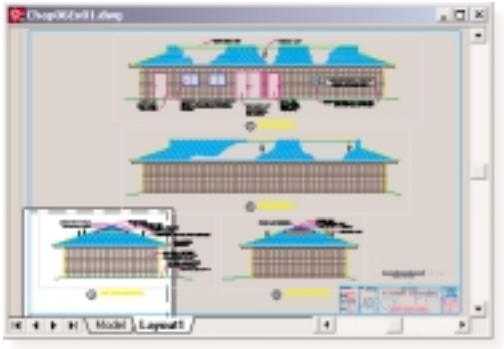
6. Click **Use last successful plot settings**.
7. In General plot options, click **Keep the layout paper size if possible**.
8. In Default plot style for new drawings, click **Use color dependent plot styles**.
9. In Default plot style table, select **NPS_HP_Greyscale**.
10. Click **OK** to exit the Options dialog

Remember, you should complete steps 2 - 10 one time only on whatever computer you're using.

Page Setup

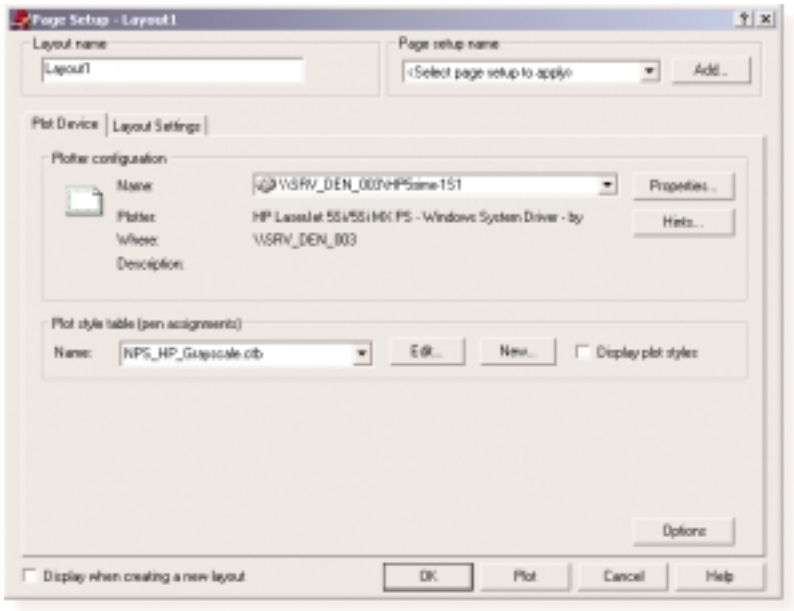
Complete the following page setup steps once in each drawing you intend to print. Refer to the example dialog boxes on the next page.

11. Switch to Paper Space: click on the "Layout1" tab near the bottom of your drawing window.



Notice the small white area in the lower-left corner of the border - it represents the sheet of paper that you're printing on. Your D-sized title block doesn't fit very well on the 8 1/2" x 11" paper. Let's correct using Page Setup...

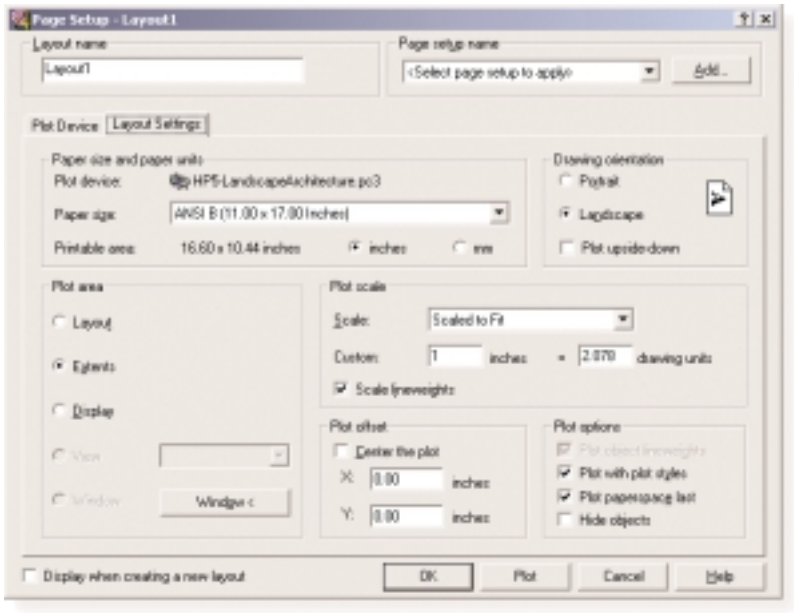
12. Right-click on the Layout1 tab, then choose **Page Setup**.



13. In the Plot Device tab, select the printer you want to use - for this exercise, choose **HP5-Engineering**, or, if it's not an option, choose some other printer.

14. In Plot style table, choose NPS_HP_Greyscale.

15. In the Layout Settings tab, select **11 x 17** paper size, and **Landscape** orientation.



16. Select **Extents** in Plot area.

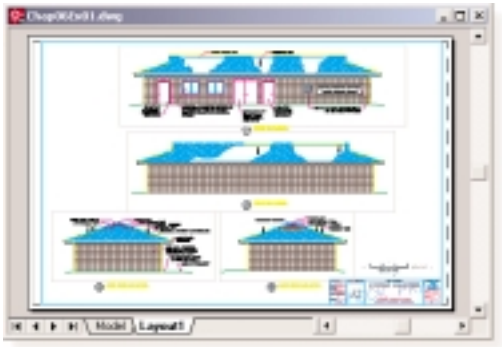
17. In the Scale pull-down, select **Scaled to Fit**.

18. Check **Scale lineweights**.

19. Check **Plot with plot styles**.

20. Click OK to exit page setup.

Your drawing should look like this:



21. Click on the Print Preview button on the standard toolbar, which displays your drawing as it will look on paper - in greyscale and with varying lineweights.

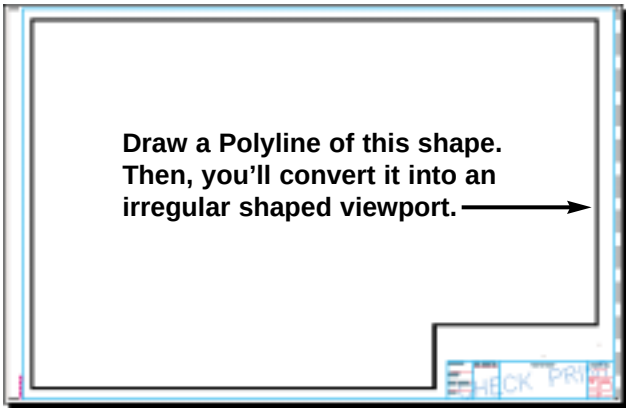
22. You can zoom in or out or pan using the mouse and the right-click shortcut menu. If the preview looks correct, right-click, then choose Plot.

This completes Exercise 1. Close Chap06Ex01.dwg, discard changes.

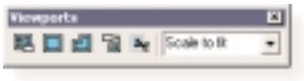
Exercise 2 - New Layout and Viewport

In this exercise, you'll create a new Layout, add an irregular shaped viewport, and use the viewport locking feature.

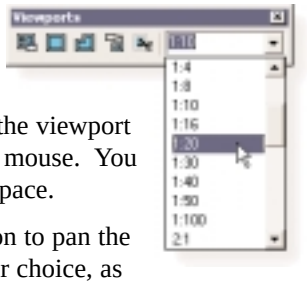
1. Open Chap06Ex02.dwg.
2. Click **Insert ➔ Layout ➔ New Layout** from the menu bar.
3. At the Enter new Layout name: prompt, type **Plot<Enter>**.
4. Switch to the Plot layout: click on the Plot layout tab.
5. Use the Icon Menu command to insert an NPS standard 2nd sheet border. Enter 0,0 as the insertion point.
6. Zoom extents.
7. Complete a page setup for this drawing. If necessary, refer to steps 12 - 20 of exercise 1. In step 12, right-click on your new Plot layout tab, then choose Page setup.
8. Draw a closed polyline like the one shown below. It should be just inside the border lines, and avoid the title block. Leave room for a north arrow and scale bar.



9. Turn on the Viewports toolbar, if it's not visible: right-click over any AutoCAD toolbar button, then select Viewports.



10. Click on the Convert Object to Viewport button 
11. Select the polyline you created in step 8.
12. Select the new viewport by left-clicking on its edge.
13. Select 1:20 in the Viewport Scale Control box of the Viewports toolbar.



14. Position your cursor within the viewport area, then double-click your mouse. You are now in floating Model Space.
15. Use your mouse wheel button to pan the drawing to a location of your choice, as if you were arranging it for printing. Make a mental note of the drawing so far.
16. Double-click outside of the viewport area. You are now in Paper Space.
17. Select the viewport by left-clicking on it.
18. Right-click, then select Display Locked ➔ Yes from the shortcut menu.
19. Switch back to floating Model Space by double-clicking within the viewport with your mouse.
20. Using your mouse wheel, zoom in, then pan around. Notice that when you zoom or pan, AutoCAD switches to Paper Space, completes the zoom or pan, then returns you to Model Space. Your viewport should display the same area as it did after step 15.
21. Return to Paper Space, then zoom extents.

    << Clap your hands for AutoCAD now! >>

22. This completes Exercise 2. Close Chap06Ex02.dwg, discard changes.

When using the Viewport Scale Control box, as you did in step 13, if you don't see the scale you want, just type it in. For example, for 1:200 scale, you can enter 0.005, which is 1 divided by 200.

Exercise 3- Save & Restore Page Setup

In this exercise, you'll import Page Setup's from a prototype drawing, and save your own page setup. A Page Setup is to printing like a Dimension Style is to dimensioning. A Page Setup is a collection of all the settings you applied in steps 11 - 20 of exercise 2. It includes printer, pen settings, paper size and orientation, scale, etc. As an alternative to choosing all of those settings yourself, you can import a page setup from a template drawing, or any other drawing that has a saved page setup.

1. Open Chap06Ex03.dwg. As you can see, the paper size is set to 8 1/2 x 11, and the D sized border does not fit the paper.

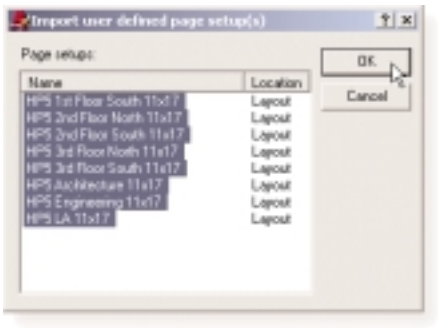
2. Right-click on the Layout1 tab, then choose Page Setup.

3. Click on the down-facing arrow in the Page setup name box. Notice the two options. There are no save page setup's in this drawing, yet.

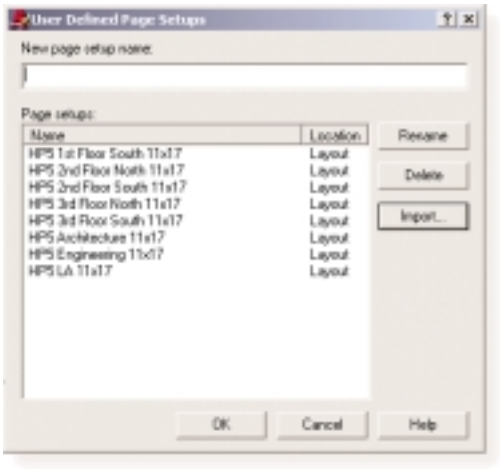
4. Click the **Add** button in the Page setup name box.

5. In the User Defined Page Setups dialog, click **Import**.

6. Locate the R2000PageSetups.dwg file, highlight it, then click Open. When you're back at your desk and on the NPS network, you'll find R2000PageSetups.dwg in the S:\Proto folder.

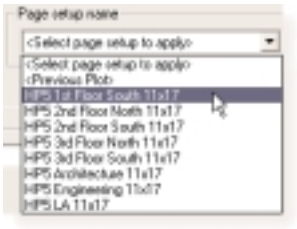


7. Highlight all page setups by clicking on the first in the list, and while pressing the Shift key, click on the last in the list. Click **OK**.



8. Click **OK** in the User Defined Page Setups dialog.

9. At this point, you have imported page setups into the drawing. To set one current, choose a page setup in the Page setup name pull-down. Click OK to exit the Page Setup dialog.



Continue with this exercise to learn how to save your own plot setups. You will configure your page setup for printing to letter-size, as if you were going to fax your drawing...

10. Using the existing Layout1 layout, use the Page Setup command to configure your plot with the following parameters:

Plot Device tab

Plotter: your choice

Plot Style Table: NPS_HP_Greyscale

Layout Settings tab

Paper: letter size, landscape orietation

Scale: scale to fit

Area: extents

Scale lineweights: checked

Plot w/ plot styles: checked

11. Click OK to exit Page Setup. Your drawing should look like this:

12. Save this Page Setup: In the Page Setup dialog, click the Add button (upper-right corner).

13. In the User Defined Page Setups dialog, type "Fax" in the New page setup name box.

14. Click OK to exit the User Defined Page Setups dialog.

15. Now you can easily switch between multiple page setups by using the Page setup name pull-down list.

This completes Exercise 3. Close Chap06Ex03.dwg, discard changes.

This completes Chapter 6.